(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
4 January 2001 (04.01.2001)

PCT

(10) International Publication Number
WO 01/00069 A2

(51) International Patent Classification[7]: A47G 29/14

(21) International Application Number: PCT/GB00/02119

(22) International Filing Date: 12 June 2000 (12.06.2000)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

9913868.7	16 June 1999 (16.06.1999)	GB
9920562.7	31 August 1999 (31.08.1999)	GB
9921401.7	13 September 1999 (13.09.1999)	GB

(71) Applicant *(for all designated States except US)*: EXPRESS-PAX LIMITED [GB/GB]; Arle Court, Cheltenham Studios, Hatherley Lane, Cheltenham GL51 6PN (GB).

(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: STEVENS, Richard, John [GB/GB]; Southwell Cottage, The Green, East End, North Leigh (Nr Witney), Oxfordshire, OX8 6PY (GB).

(74) Agents: DOWNING, Michael, Philip et al.; Fry Heath & Spence, The Old College, 53 High Street, Horley, Surrey RH6 7BN (GB).

(81) Designated States *(national)*: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

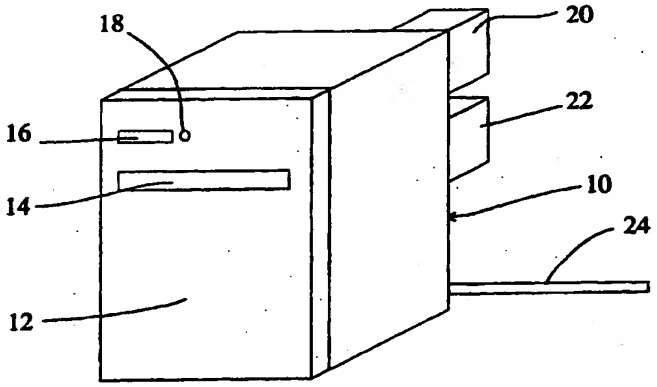
(84) Designated States *(regional)*: ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:

— *Without international search report and to be republished upon receipt of that report.*

[Continued on next page]

(54) Title: POSTAL BOX



(57) Abstract: A postal storage box comprises an interior compartment (10) accessible via an aperture, a moveable cover (12) over the aperture, and a lock adapted to retain the cover (12) in a closed position or allow the cover (12) to be opened, a control means (22) able to control the lock state, a memory element adapted to store box state information, and a means for writing box state information to the memory element, wherein the control means (22) control the lock state on the basis of the box state information. The box preferably also includes means for inputting parcel information (16) such as a bar code reader, or the box could communicate (18) with a handheld unit carried by the courier by IR, radio, or other links. The means for writing box state information is preferably controllable remotely, for example via a modem link (24) or via the Internet. It is also preferable for at least part of the box state information to be available over the modem or Internet link (24). Thus, the box controls delivery through any combination of package content, current box contents, courier, box location, box identification, customer identification, delivery company and date.

WO 01/00069 A2

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

POSTAL BOX

TECHNICAL FIELD OF THE INVENTION

The present invention relates to an postal box.

BACKGROUND ART OF THE INVENTION

Current methods for delivering and collecting packages suffer many problems. If the customer is not in to receive a delivery, the courier will either leave a hand-written note with an address, a telephone contact and an authorization code, or leave the delivery with someone else. This will lead to delays and usually a journey for the customer to collect the package. Similar problems exist for sending packages, generally relating to the difficulty in ensuring that the courier can collect the package at a time when the customer is present to hand it over.

In general, packages can be delivered by private courier companies or by state-owned postal authorities. In this application, both will be referred to as postal services. Thus, this term is intended to apply to any service which transports packages for delivery to an address, ie the box. A courier is then the person who physically delivers the package.

Arrangements are usually made by telephone contact between the customer and courier, which again means that both have to be present at a known location at the same time.

SUMMARY OF INVENTION

The present invention therefore provides a postal storage box comprising;

an interior compartment accessible via an aperture;

a moveable cover over the aperture, and a lock adapted to retain the cover in a closed position or allow the cover to be opened;

a control means able to control the lock state;

a memory element adapted to store box state information, and a means for writing box state information to the memory element;

wherein the control means control the lock state on the basis of the box state information.

This is preferably connected to a remote user via a secure communication system to allow the box to communicate with at least one of its owner, the supplier of the goods, and the courier.

This allows the box to acquire a degree of intelligence, in that it can accept or reject packages depending on prior instructions. To assist this, the box preferably also includes means for inputting parcel information. A bar code reader is suitable, or the box could communicate with a handheld unit carried by the courier by IR, microwave, radio, or other links. Thus, for example, the box could be programmed to refuse access after delivery of a high value item, but to allow further access after a valid removal of that item. Alternatively, the box could include a refrigeration unit that is activated when the parcel requires this, subsequently refusing access to warm items or refusing access entirely to prevent heat loss. Other environmental sensors within the box would allow more refined control, such as denying access for frozen foodstuffs if the interior of the box is above a predetermined temperature. That temperature would be that above which the box's refrigeration unit would be unable to bring the temperature down to an adequate level before the foodstuffs became spoiled. the box could have a unique identifier, position sensor, and be aware of date. Together these elements mean

that the opening of the box may depend on the package, the delivery company, the courier, the current contents of the box, the date, the box identification, or any combination of these factors.

This handheld unit would further enable other valuable advantages. On completion of the contract for delivery, the courier and the box could both be informed of a package code which could be offered to the box by the courier unit. If there was a match and the box was otherwise accessible, the box would open. If not, the box would refuse access. Incorrect deliveries would then be impossible. The owner of the box could then supply the appropriate code, for example stored in a further such unit, at which point the box would allow access to remove the package. Codes could be identical for all parties, or different to allow greater security. In the latter case, the box would need either greater storage capacity to retain all of the codes, or a processing means to ascertain the validity of a code. All codes should be secure to prevent unauthorised access.

The means for writing box state information is preferably controllable remotely, for example via a modem link or via the Internet. This allows the owner to reprogram the box, as needs change or (eg) to override previous instructions and allow access immediately to a waiting courier.

It is also preferable for the memory element to be able to store other generic data, such as notes or text comments. These could then be displayed for the courier if access is denied, advising them of alternative delivery strategies.

It is also preferable for at least part of the box state information to be available over the above-mentioned modem or Internet link. This would enable the courier to interrogate the box prior to departure and ascertain whether the delivery will be possible, or whether the box will refer the courier to another address. This would then allow the courier to organise a more efficient delivery strategy. In a further development, this could be automated, in which case the courier's computer

could be provided with details of a number of deliveries, interrogate the recipient boxes, and devise an appropriate route and timing.

Ideally, a log will be kept by the box and transmittable to its owner or a computer local to the owner. This would record courier codes etc relating to all deliveries and removals. The allocation of several removal codes would then allow several people to have access and for the box to record who removed an item and when. This could be useful as, for example, an after hours pharmacy in a hospital. Doctors could gain access via their unique codes (for example on a smartcard), the box recording this for security and asset tracking reasons. Individual items could also carry codes, thus recording which doctor (for example) removed which product and when.

In another aspect, the present invention provides a postal storage box comprising;

an interior compartment for receiving a parcel, accessible via an aperture;

a moveable cover over the aperture,

a memory element adapted to store parcel information,

a means for receiving parcel information and writing same to the memory element; and

a means for communicating the parcel information to the parcel thereby to be acted upon.

Thus, this aspect of the invention allows an intelligent item which is to be delivered to be transported in an inactive state which will be valueless to a potential thief. When it arrives at the correct storage box, it is activated on receipt of the parcel and postal box information and becomes of value. Items which are suitable for this type of delivery include smartcards or encoded cards such as season tickets, credit cards, electronic cash cards etc.

Additional security can be provided by a means of authenticating the delivered item against the identification of the owner and/or box identification.

The box could be arranged to withhold the parcel information until the appropriate release code is provided to the box. Thus, the parcel would only become active when the box was opened correctly. When (for example) the owner inserts an suitably encoded smartcard, activation codes could be transmitted to the contents. This could be used to activate items such as season tickets. A thief who gained illicit access to the box, for example by causing physical damage to the box, would find the contents valueless.

The parcel information could be provided to the parcel by any suitable means, such as infra-red, microwave tag, bar code reader, rf or other transmission methods, or by a card writer. The parcel could contain the card held within a unit comprising a card writer and an rf receiver, enabling the box to permit secure delivery and activation of the card in a manner which would be completely transparent to the user.

The activation code could be specific to the intended box, require a unique box identifier to be stored in the box. This would prevent a mis-delivered card from being activated. Alternatively, or in addition, the box could include a geographical location device such as GPS, the code then being specific to a particular location or range of locations. A thief taking the box and parcel away would then find the card equally valueless. Similarly a time/date stamp would fix the delivery date for "one-time" usage, ie the same code could not open the box twice.

BRIEF DESCRIPTION OF DRAWINGS

Embodiments of the present invention will now be described, by way of example, with reference to the following figures, in which;

Figures 1 illustrates a first design of box;

Figure 2 shows an array of boxes;

Figure 3 shows a communication structure for the box of fig 1;

Figure 4 shows a communication structure as it appears at the box;

Figure 5 shows the communications structure for setting up a delivery;

Figure 6 shows the communications structure for reporting a delivery;

Figure 7 shows the structure of a remote pc for controlling the box;

Figure 8 shows the interaction between a box and a courier's unit.

DETAILED DESCRIPTION OF THE EMBODIMENT

The embodiment is an intelligent collection and delivery box which enables packages to be delivered and collected in an automatic, secure and cost-effective way. It is an electronic system which is opened for delivery only with a secure combination of electronic tags to identify the courier, the carrier and the package. This allows packages to be delivered and collected securely day or night without the customer being present to manage the delivery or collection process. It is typically attached to an outside wall, and may be accessed from both inside and outside a building. Similarly an intelligent package would be able to detect the unique identifier.

The system can be programmed to allow what type of packages should be delivered and the courier can securely question across the Internet what can be delivered and when, before planning delivery schedules. Multiple deliveries to one

box will be available if the customer permits this option, and boxes could be stacked together with inter-communication. Authorizing access to a box would be programmable, e.g. if a valuable package is delivered, access could be denied until it is removed by an authorized person.

Another option for the box owner is sending mail and packages for a courier to collect and frank the items and enter the cost into the box, or have the cost deducted automatically from a postage credit facility within the box. This option would save users travelling to (eg) a Post Office or dry cleaner.

All transactions will be handled by encryption ensuring access to the box or to information only to authorized individuals. Encryption will be used to limit access about information (e.g. who has such an box and the type of box etc.). The system would use public and private key encryption and possibly also a date stamper, to allow secure transmission of information to specific destinations.

A range of different designs would be available, with various sizes, cooling, multiple internal lockers or sections. Environmental sensors would be included to understand the state of each internal section. A set of boxes could be available at a site to allow for secure multiple collections and deliveries. Several boxes could be interconnected so that a series of packages can be left in different boxes, and the courier given advice about which box to deliver or collect from.

The box will be able to indicate to the courier whether it is able to receive a delivery (either for manual acceptance or automatic acceptance).

A courier will be able to open a box only with a combination of the user's public key, the package number itself, carrier identification and the identification of the courier. Opening may also depend upon the box identifier, date and geographical location. The delivery and package information may be combined on

the package. The public key could contain information about the size and nature of the box (e.g. whether it is refrigerated).

Customers will be able to program the box for two or three successive deliveries to the same box. If a high value package is delivered, the box could be programmed to deny access for further deliveries until the package has been removed by an authorized person.

Customers will be able to communicate to the carrier and customer by e-mail, e.g. to indicate a delivery, or to say that a package or a courier has been refused entry. The box will detect when it is empty, for example after a package has been taken, the box may then allow another package to be delivered. The owner may program the box to stay open when empty. Where the box is being used in a commercial environment, it would be able to communicate with office systems, e.g. to provide notice of delivery so that payments could be authorized.

The box may be remotely accessed by customers and also may be securely accessed by a courier to optimize the delivery cycle to determine which items the box is capable of holding, e.g. a freezer unit for frozen food deliveries. This would allow deliveries to be programmed more efficiently, e.g. whether it is ready to receive a delivery. A complete audit trail of all transactions would be held by the system.

The box will incorporate a franking system, or part of a franking system. Each package that is collected can be allocated a unique number, and the cost can be entered into the box, to have the cost deducted automatically from a postage credit facility within the box. The system may have a postage credit facility uploaded on the Internet.

The system will operate as a self-contained free standing unit e. g. may operate disconnected from external computers, or may be programmed by customers to allow the system to operate in various delivery, or collection modes.

The box can be equipped with a variety of sensors such as a bar code reader or other remote tag, cordless transmitter receiver, and a Smart Card reader. It can be equipped with communication links to other boxes, personal computer, organizational computer, or a direct connection to the Internet. It would have a unique Internet address or a local area network address. It can also have a refrigeration unit, and computer managed locks for outside access and access to internal partitions. Remote tags are available which communicate via rf signalling, typically microwave.

It contains a computerized unit which allows such sensors, locks, and communications to be added easily into the system.

The cost savings are immense for customers and couriers where costs are incurred with repeated and failed deliveries, late deliveries and frustrated customers having to make a journey to couriers. The system will be more secure than current systems due to a complete audit trail of all deliveries and collections held by the system - current systems rely on paper signatures. Further cost savings will be achieved with more efficient courier route planning, knowledge of whether delivery or collection is possible and flexibility to re-optimize the route with up-dated information during the delivery cycle.

The principle advantages of the box as set out above are:

1 It automates and controls the delivery and collection of packages, reducing the need for people to be on-site day or night or available for delivery and collection.

2 It communicates securely with customers and carriers by computer and Internet before during and after the delivery to allow them to optimize collection and delivery.

3 The behaviour of the box can be optimized, depending on the nature of the packages and what deliveries have already taken place.

4 A complete record of all transactions can be taken.

Typical examples

The box can also manage the delivery, payment for and receipt of items which are information-based, rather than physical. For example, music, tickets and books can be delivered digitally, checked and paid for by the box.

The box has encryption facilities to check that the order is correct. From the supplier's viewpoint, payment for goods delivered can be guaranteed since the box has unique numbering and ownership. From the customer's viewpoint, the box can ensure that only goods that are ordered are accepted and paid for.

The box can connect to internal sensors such as phone, gas and meter reading equipment and can therefore be used for transmitting details of usage and for paying bills. In this case, the advantage is that the information comes from a uniquely identified physically located object. It can also be used by the customer for paying bills automatically.

Example 1: Supermarket deliveries

A customer orders groceries for delivery at home, either electronically or at the store. The customer might advise the optimum time for delivery, and provides the unique address which allows the supermarket to determine the nature of the customer's box. The supermarket sends the customer information about the

proposed delivery times on the Internet. The box may indicate when it will be empty to help the supermarket organize the routing. If the delivery van should find the customer out, the courier supplies a code for the package, the courier, and the supermarket ('carrier'). The courier may read a bar code off the package, and use this to transmit the package ID to the box. It checks the details are correct and then automatically opens and registers the groceries and the courier. If the box contains food that should be kept cool, a cooler in the box will be actuated. Messages can then be sent to the customer's computer and to the supermarket delivery service advising the user has 3 hours to collect frozen food before it defrosts.

If the box already has a package inside, the courier may be refused entry. If the package inside is of low value and the courier is trusted, access may be allowed.

Example 2: Collection and franking of mail and packages

A customer puts a mixture of letters and packages (eg dry cleaning) into the box, and sends a message (either manually or through a computer link) to a mail collection person that there is mail to collect. When the mail collection person arrives, the letters and packages are removed. The mail collection person has a franking machine, and franks each package or envelope and the franking costs may be entered into the box, or the box can "pay" for the franking electronically from a postage credit facility.

Example 3: Computer upgrade supply and computer deliveries

In this example, a set of boxes is in use inside the premises of a computer company. Staff from the company are authorized to send computer upgrades from the boxes. Messages are sent to carriers, perhaps to several different carriers. Couriers are directed to specific boxes to collect the upgrades. Information about the upgrades is transferred to the company financial systems through the process of insertion and collection by the courier. The staff are able to create bar code (or

similar) tags for the upgrades, so that transaction information can be read as the upgrade is entered in a box and (for example) sent to the courier.

The same boxes can be used to receive computer parts deliveries. As parts are delivered, a message is routed to the right address in the customer's office to indicate its arrival. Information about the delivery can also be passed to the company's financial systems. This information is provided by the package itself, and/or the courier. Staff with the right Smart Card are able to open the boxes and collect the parts, and the it is then re-set.

Example 4: Rented boxes :

In this example, the customer orders a part for collection during a journey. The customer defines a route (e.g. a journey to work), and orders a part. The part is delivered to a box at a railway station or airport, after warning the customer of the intended delivery. The passenger is given a code (e.g. onto a SmartCard), which allows the box to be opened or causes other boxes to direct the passenger to the right box. The charging for the part and for the rental of the box may be done on opening the box.

Referring to the figures, figure 1 shows a box according to a first embodiment. This comprises a compartment 10 with a door 12 at the front thereof. The door 12 has a letterbox 14, 16 for small items, and an socket 16 for receiving a smart card. It also has an IR receiver 18 for wireless communication with a courier's handheld device. Larger items are delivered by opening the door, which is only possible as set out above if access is allowed after communication via the smart card reader or IR port.

A refrigeration unit 20 is provided on the rear of the box, as described above. Control circuitry is provided in a processor unit 22, also at the rear. Communication with the outside world is via a cable link 24 to the processor unit 24. The package could also contain information as to the necessary and/or desired temperature. This

could be read by the box as described herein which then controls the refrigeration unit accordingly.

Figure 2 shows an array of such boxes 10. An array might be provided at public congregation points such as railway stations, supermarkets, shopping malls, intersections, car parks and the like. Such "public" boxes might then be hired out as needed, and could be allocated as called for and paid for on collection of the packages, ideally as part of the access process. To this end, a link 26 between boxes is shown allowing interexchange of status data between the boxes, eg to decide which box is presently empty and available for hire.

Figures 3 to 7 illustrate communications protocols between the box and outside entities at various stages, and show the nature and configurations needed for the links and the processor unit 24.

Figure 8 shows the steps involved in using the box as a mail collection point. In step (a), the customer opens the box 10 using their access code and deposits packages 50 inside, closing the door of the box which then locks. The packages have a bar code 52 which is printed by software supplied to the customer, and encodes details of the packages and the applicable postal charges.

In step (b), the courier collects the packages. Access is gained to the interior of the box 10 either by providing a courier code or by IR communication between the box and the courier's handheld unit 54. The courier removes the packages 50 and scans the barcodes 52 with the handheld unit 54. This enables the handheld unit 54 to calculate a charge to the customer.

In step (c), having closed and locked the box 10, the courier sends charging data from the handheld unit 54 to the box via IR receiver 18. This is then debited to the customer's account.

Example 5: Delivery and authorisation of digital information

In this example, the customer orders a music CD. The music CD is delivered to the box as a string of digital information, and may be specifically encoded for the customer receiving the data. The box interrogates the digital delivery to check it meets the specific ordering criteria, and accepts it if it does so. The music is stored digitally in the box. The box responds that the order has been successfully delivered to the right box, and the customer may then authorise payment for the music.

In other variations, the parcel and the box can intercommunicate to provide greater levels of security. The user will be able to send or receive physical components which are activated by information contained in or sent to the box. For example, the user could be sent a smart card , eg a season ticket for a sports club, or a credit card, or collect a card from a shop or other outlet. The card would be inactive when provided. The encoded information to activate the card would be sent to the Internet address of the box, or by other means of transmission, and the card activated automatically by the user at the box. The supplier could include a code so that the card can only be activated by a specific box belonging to the correct user. The code therefore adds value to the item being delivered. As a result, the posted item is quite secure and valueless to a thief without the separately delivered code or access to the right box.

A further example of this concept would be the delivery of cash to an electronic cash card. Through the use of a box as described herein, the card could only be activated by the combination of some or all of the activation code or codes, a unique identifier for the box concerned, the delivery details for the parcel, and the physical location of the box.

The box could contain a pager device to receive the coded information, or an Internet connection. A pager would permit the box to be arranged so as to open the

box after receipt of an encrypted pager message. This would allow remote release of the contents of the box, even without an Internet connection.

The box could contain a position locator such as a GPS receiver. This would allow the box to verify its position to third parties, such as for payment or for tracking a mobile box. The position location could be encrypted to allow external checking but not alteration, as a security measure.

Thus, as an example, a duly authorised supplier could check that the supplied address conforms to the actual position of the box. The supplier could then be confident both of a unique identification for the box and a geographical location. This would allow portable box systems to be tracked by the courier or any authorised party through the Internet while they are in transit. It would ensure that goods were only delivered to the correct physical location. If a box were stolen, it could be informed of this (or detect it automatically) and be rendered inactive such as by locking the cover permanently etc.

CLAIMS

1. A postal storage box comprising;

an interior compartment accessible via an aperture;

a moveable cover over the aperture, and a lock adapted to retain the cover in a closed position or allow the cover to be opened;

a control means able to control the lock state;

a memory element adapted to store box state information, and a means for writing box state information to the memory element;

wherein the control means control the lock state on the basis of the box state information.

2. A postal storage box according to claim 1 including means for inputting parcel information.

3. A postal storage box according to claim 2 in which the means for inputting is one of a bar code reader or tag.

4. A postal storage box according to claim 2 in which the means for inputting is one of an IR, microwave or radio link.

5. A postal storage box according to claim 1 including means for communicating securely with a remote computer.

6. A postal storage box according to claim 1 including a selectively activatable refrigeration unit.

7. A postal storage box according to claim 6 adapted to read temperature information from a package and control the refrigeration unit accordingly.

8. A postal storage box according to claim 1 in which the means for writing box state information is controllable remotely..

9. A postal storage box according to claim 1 in which the box state information includes details of at least one of box contents, box identification code, and date.

10. A postal storage box according to claim 8 in which remote control is by way of one of a modem link or the Internet.

11. A postal storage box according to claim 1 in which at least part of the box state information is available for remote interrogation.

12. A postal storage box comprising;

an interior compartment for receiving a parcel, accessible via an aperture;

a moveable cover over the aperture,

a memory element adapted to store parcel activation data,

a means for receiving parcel activation data and writing same to the memory element; and

a means for communicating the parcel activation data to the parcel thereby to be acted upon.

13. A postal storage box according to claim 12 which is arranged to withhold the parcel activation data until a release code is provided.

14. A postal storage box according to claim 13 in which the parcel activation data is provided to the parcel by one of infra-red or rf transmission, by a card writer, by a microwave tag or by a bar code reader.

15. A postal storage box according to claim 12 including a geographical location device.

16. A postal storage box according to claim 15 in which the output of the geographical location device is stored securely.

17. A postal storage box according to claim 15 in which the parcel activation data is valid only in combination with particular location data or range of location data.

18. A set of postal boxes, each arranged to communicate with others of the set to assist delivery and collection between members of the set

19. A set of postal storage boxes according to claim 18 in which members inform other members when they are empty.

20. A postal storage box including means for communication with an external agency adapted to prevent removal of an item therewithin prior to communication with at least one of an owner of the box and a delivery agency.

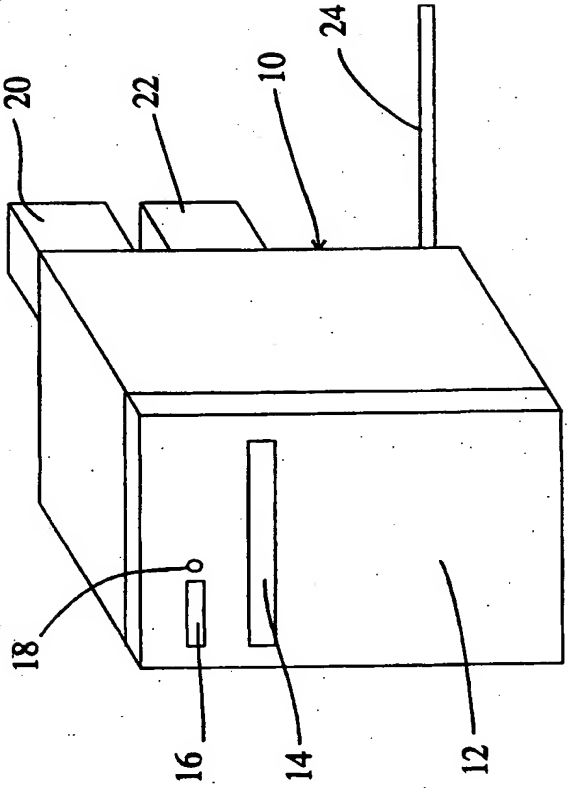


Fig 1

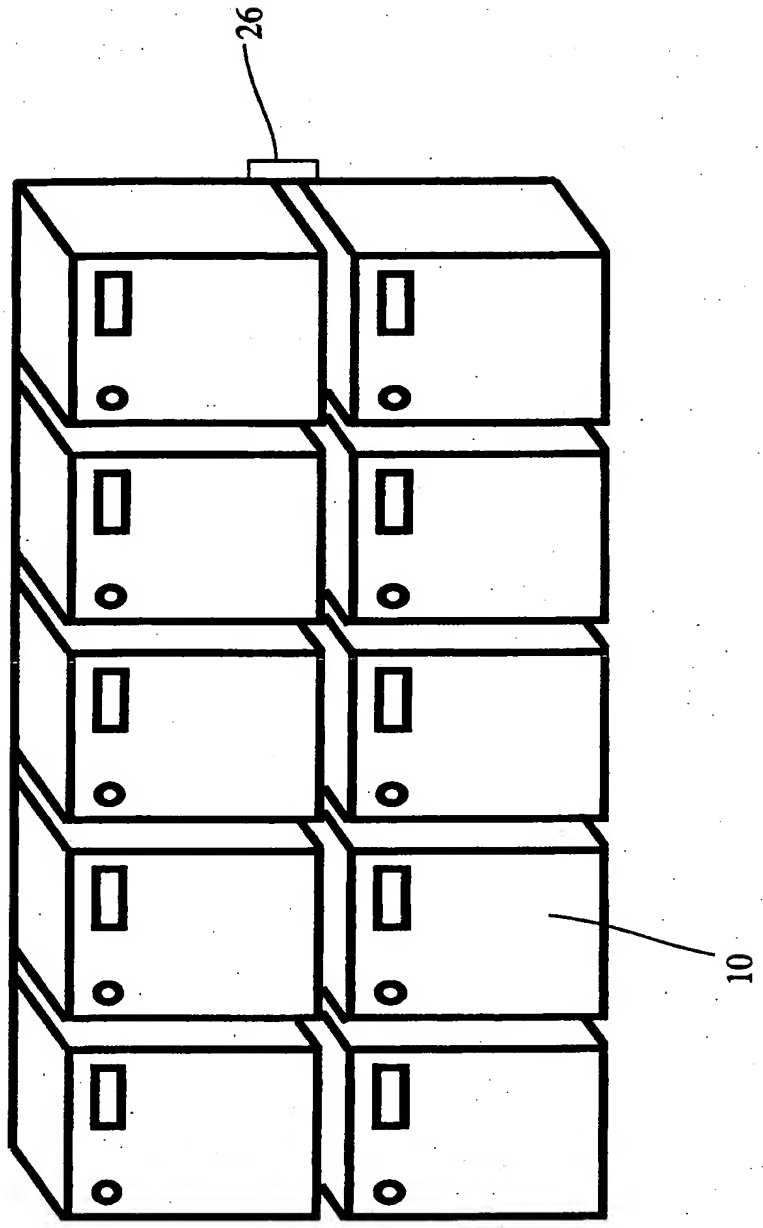


Fig 2

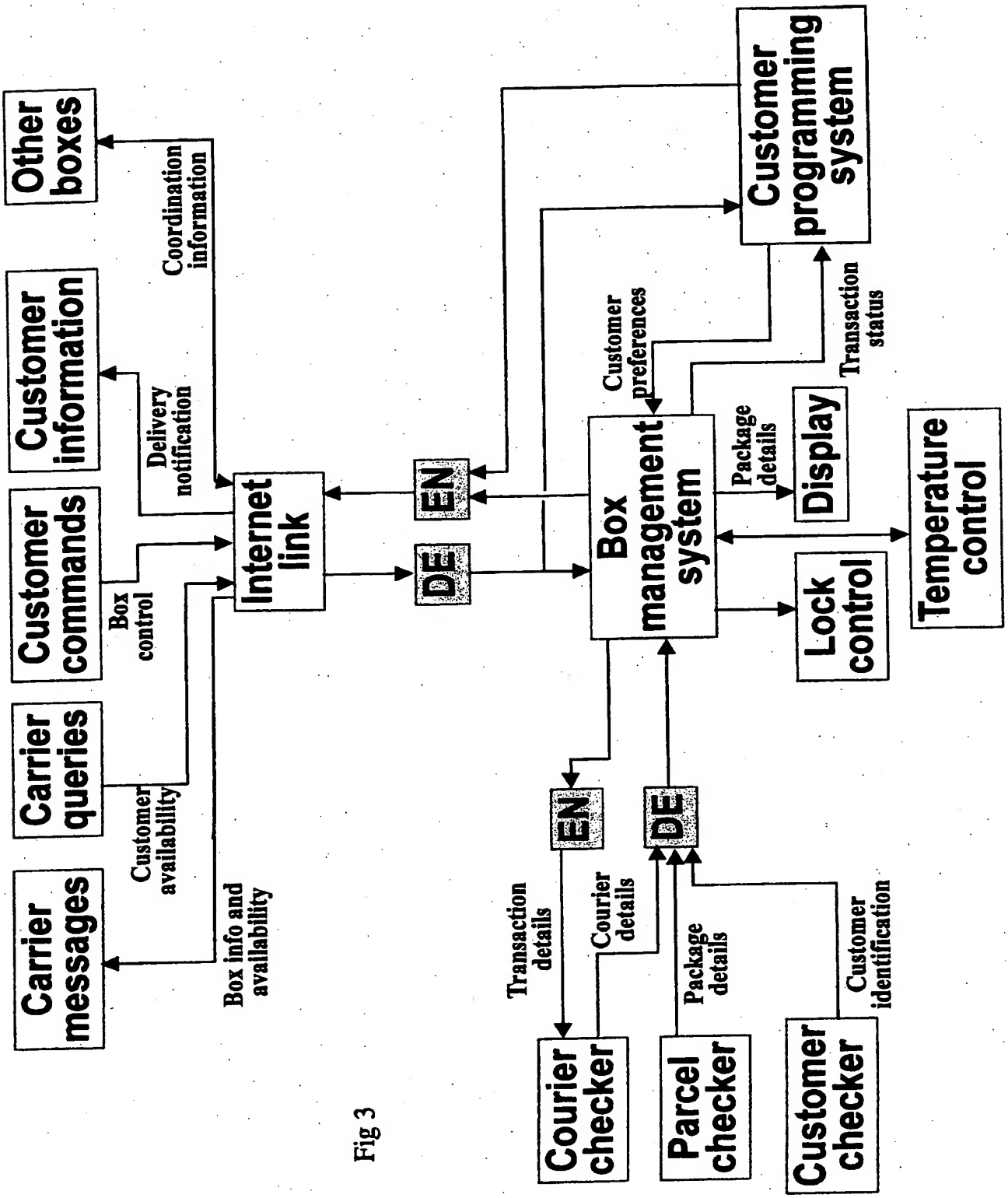

Other boxes
Coordination information
Customer information
Delivery notification
Customer commands
Box control
Carrier queries
Customer availability
Carrier messages
Box info and availability
Internet link
DE
EN
Customer programming system
Customer preferences
Transaction status
Box management system
Package details
Display
Lock control
Temperature control
EN
DE
Transaction details
Courier details
Package details
Customer identification
Courier checker
Parcel checker
Customer checker

Fig 3

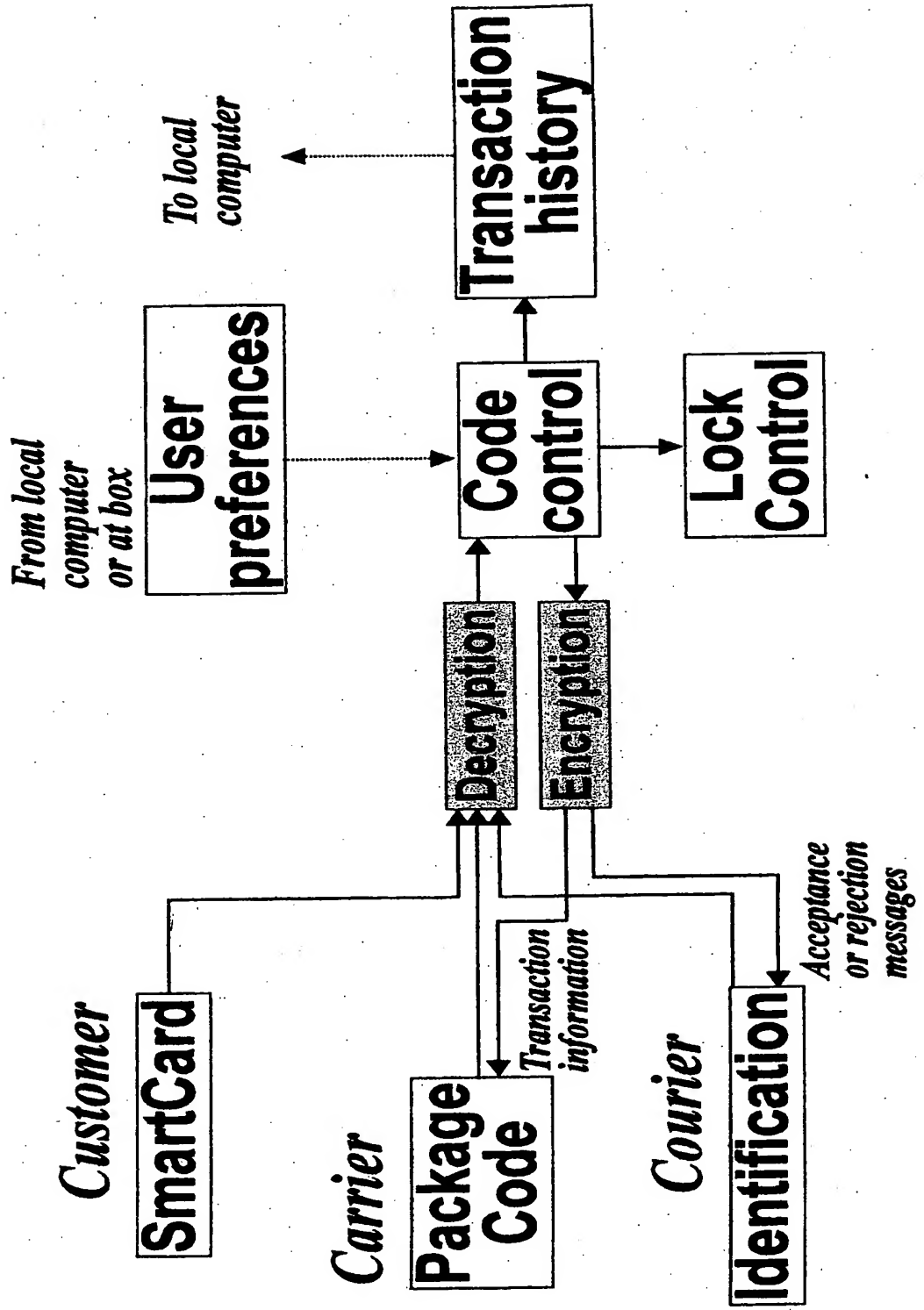

Customer
SmartCard
Carrier
Package Code
Courier
Identification
Transaction information
Acceptance or rejection messages
Decryption
Encryption
From local computer or at box
User preferences
Code control
Lock Control
To local computer
Transaction history

Fig 4

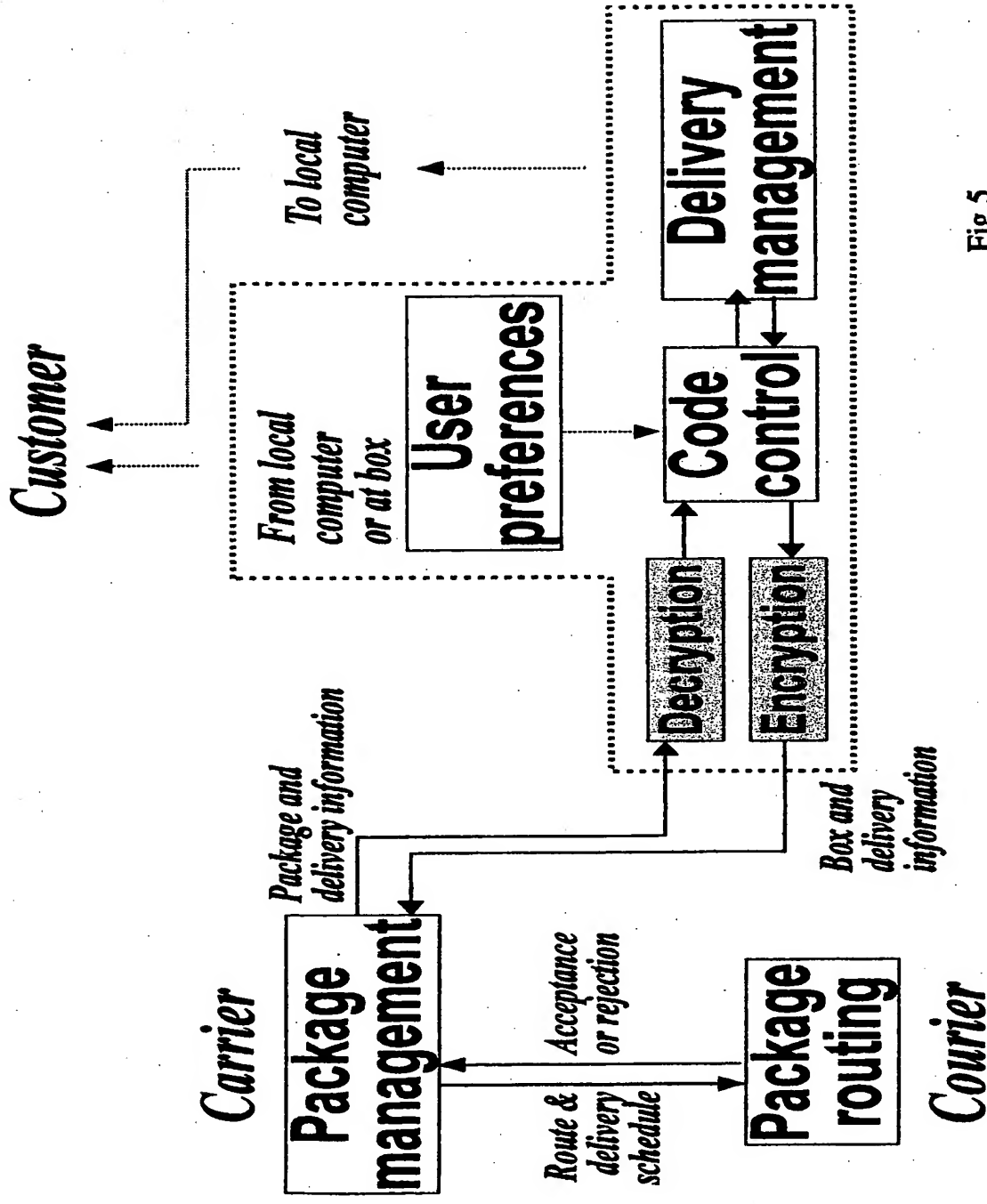

Customer
To local computer
From local computer or at box
User preferences
Delivery management
Code control
Decryption
Encryption
Package and delivery information
Box and delivery information
Carrier
Package management
Acceptance or rejection
Route & delivery schedule
Package routing
Courier

Fig 5

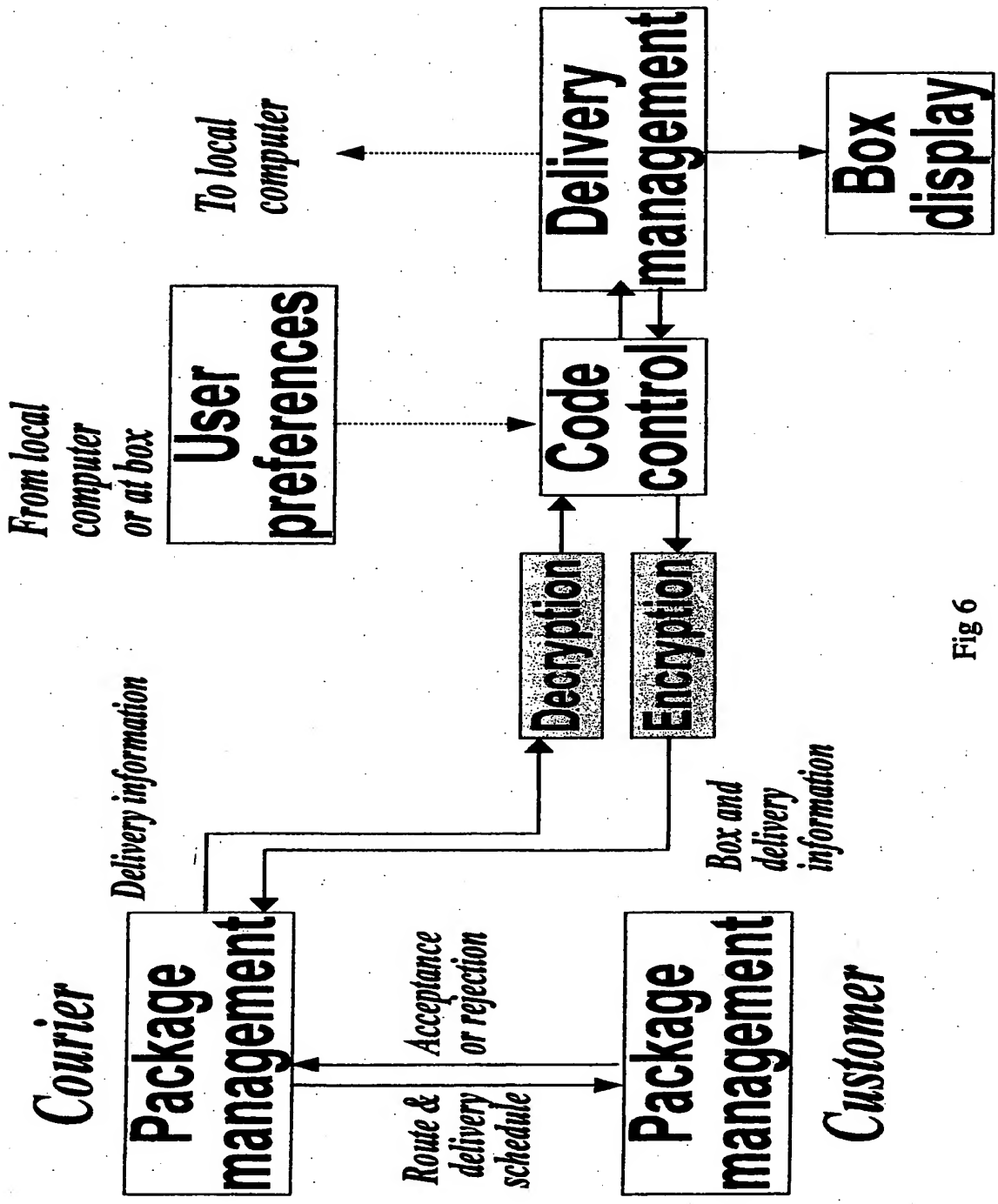

Courier
Package management
Delivery information
Route & delivery schedule
Acceptance or rejection
Package management
Customer
Box and delivery information
Decryption
Encryption
Code control
User preferences
From local computer or at box
To local computer
Delivery management
Box display

Fig 6

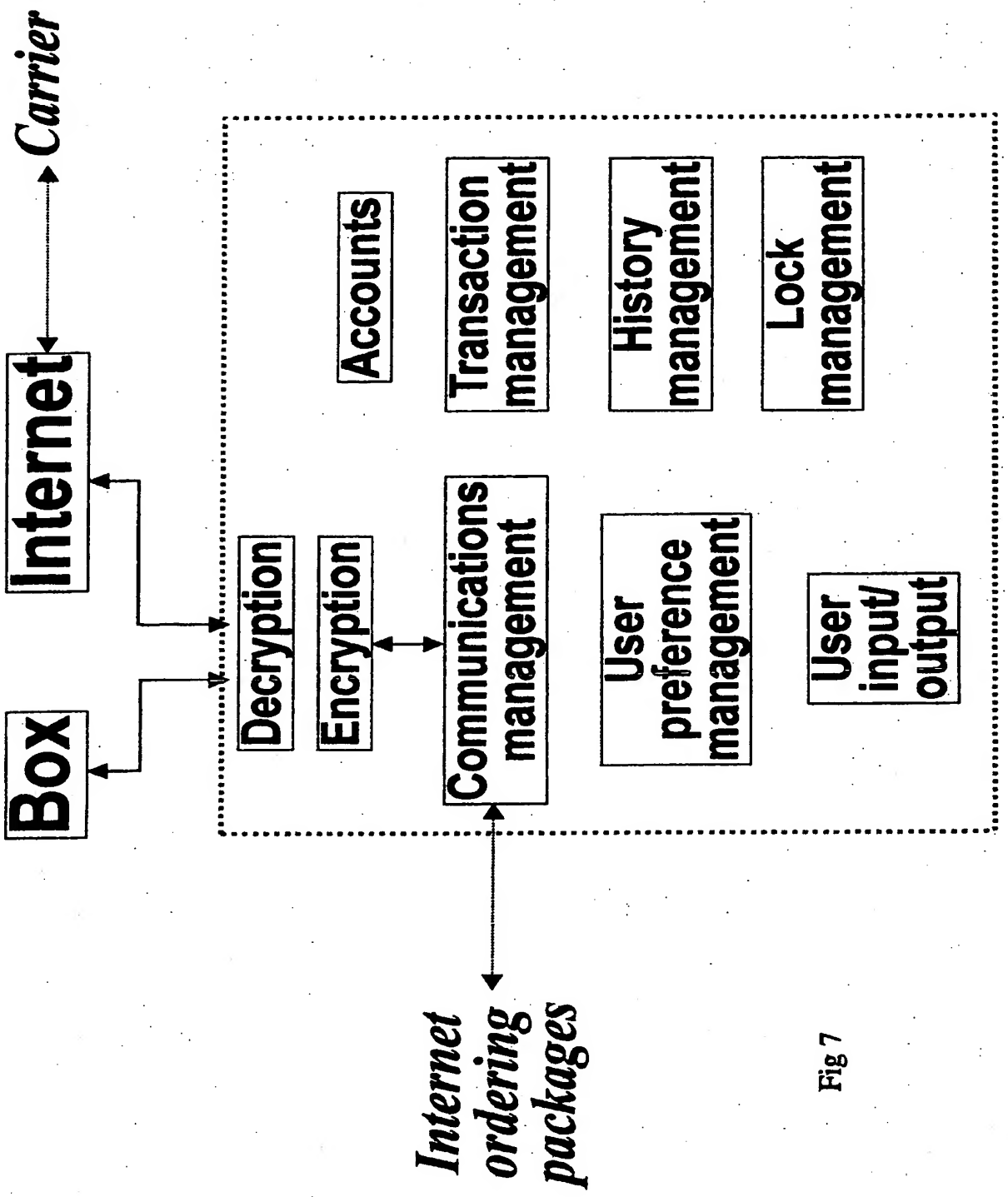

Carrier
Internet
Box
Decryption
Encryption
Communications management
Accounts
Transaction management
History management
Lock management
User preference management
User input/ output
Internet ordering packages

Fig 7

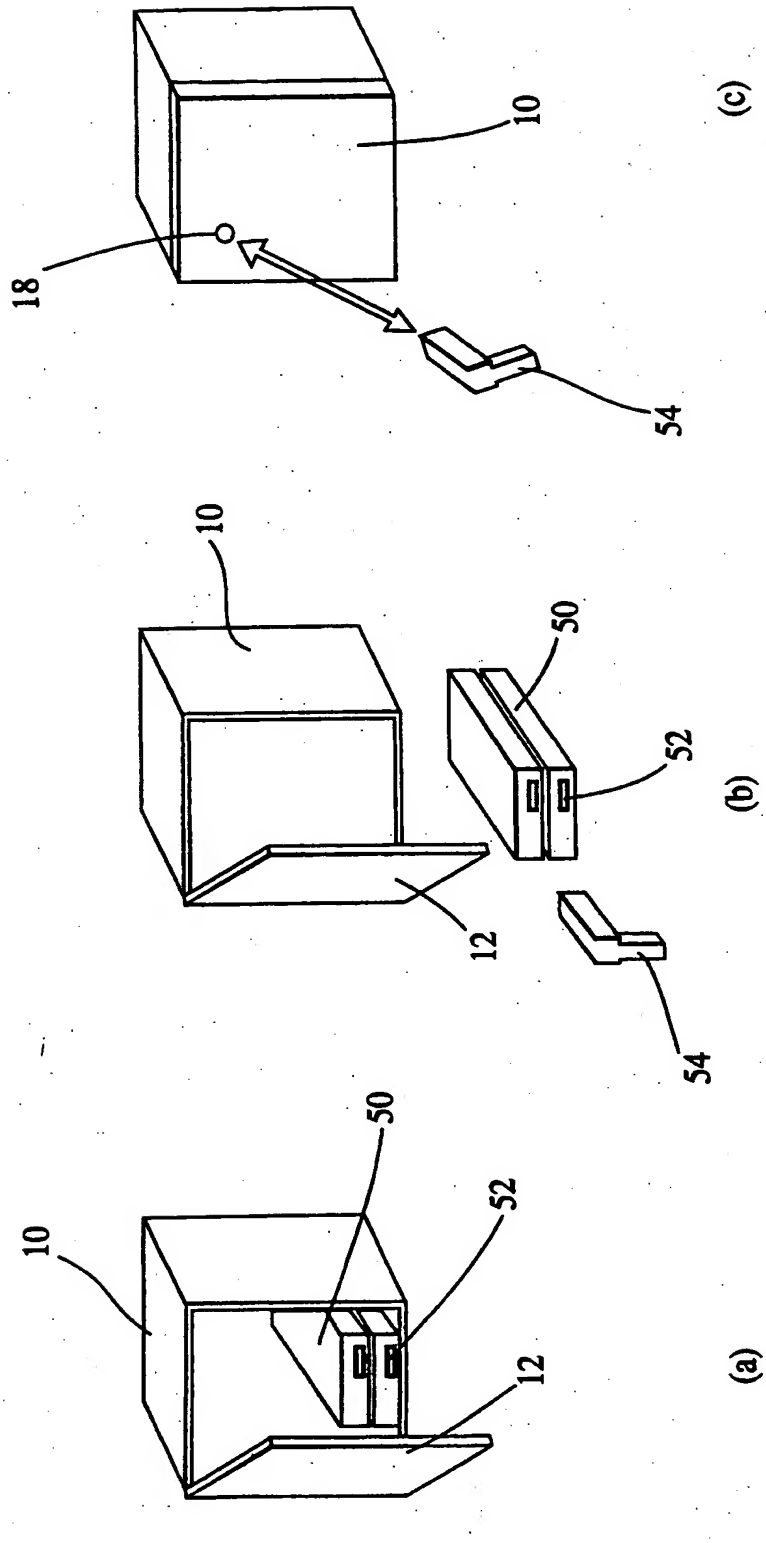


Fig 8